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| 10/603,014      | 06/24/2003  | Jeffery Scott Hawkins | 1913.3008.001 (DDC) | 2442             |

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| EXAMINER |
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CAVALLARI, DANIEL J

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| ART UNIT | PAPER NUMBER |
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2836

DATE MAILED: 02/28/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |  |   |  |
|------------------------------|--|---|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>10/603,014   | <b>Applicant(s)</b><br>HAWKINS, JEFFERY SCOTT |  |
|                              | <b>Examiner</b><br>Daniel J. Cavallari | <b>Art Unit</b><br>2836                       |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 14 December 2005.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 4-7 and 13-17 is/are allowed.
- 6) ☒ Claim(s) 1-3, 8-12 and 18-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 December 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

The examiner acknowledges a submission of the amendment filed on 12/14/2005. The replacement drawing of Figure 3, changes to the specification, amendments to claims 1-8, 13, 14, 18, & 19 and new claim 20 are accepted.

Applicant's arguments filed 12/14/2005 in response to claim 1 has been fully considered but they are not persuasive.

The applicant argues that Hanson et al. (hereinafter referred to as Hanson) teaches conditions required in order to shutdown an engine, rather than automatically start an engine. Although the examiner respectfully disagrees and points the applicant to claim 18 of Hanson, the amendment to claim 1 moots the argument that Hanson fails to teach starting an engine as it adds the limitation of stopping an engine. The amendment further adds alphabetical labels to the steps but does not provide any wording or indication that such labels are meant to add a particular order to the steps. This is further supported by the fact that the preamble reads "A method for starting and stopping an internal combustion engine..." in which the final step of claim 1, or (d), comprises the step of "starting the engine". The rejection of claims 1-8 can be found below.

Applicant's arguments filed 12/14/2005 in response to claims 8-12, 18, & 19 have been fully considered but they are not persuasive. The rejection to these claims can be found below.

***Allowable Subject Matter***

Applicant's arguments, see pages 9, filed 12/14/2006, with respect to claims 4-7 have been fully considered and are persuasive. The objection of claims 4-7 has been withdrawn making claims 4-7 allowable for reasons disclosed in the non-final office action.

Applicant's arguments, see pages 9-10, filed 12/14/2006, with respect to claim 13-17 have been fully considered and are persuasive. The objection of claims 13-17 has been withdrawn making claims 13-17 allowable for reasons disclosed in the non-final office action.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hanson et al. (US 5,317,998) & Goertler et al. (US 4,520,271)

Hanson et al. teaches:

- Determining that one of three conditions exists, read on by a temperature of a cab of a vehicle being outside of a predetermined range (See Abstract & Column 6, lines 11-43)
- Determining if a battery voltage is below a predetermined limit (See Column 12, Lines 21-30)
- Determining if an engine temperature is below a predetermined limit (See Column 10, Lines 27-33)
- Confirming that a hood is closed, that a transmission is in neutral, and that a park brake is set (See & Column 4, Lines 20-28 & Column 7, Line 63 to Column 8, Line 5)
- Starting an engine, read on by step 480 (See Figure 11 & Column 15, Lines 5-18)

Hanson et al. teaches the use of various sensors but fails to teach confirming that a fuel level is above a predetermined level. Goertler et al. teaches a fuel sensor (48) used to measure the amount of fuel in a tank of a vehicle and adjust the automatic shutdown system depending on whether the fuel is above a predetermined level (See Column 4, Lines 12-22).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the fuel sensor to monitor the fuel level and determine if it is above a predetermined level, as taught by Goertler et al. into the

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engine control system taught by Hanson et al. The motivation would have been to have the ability to conserve fuel (See Column 4, Lines 12-22).

Hanson et al. further teaches:

In regard to Claim 2

- Warning the operator of a pending engine start before the step of starting the engine, step (d), read on by the buzzer which is activated when an automatic engine start is going to be made (See Column 4, Lines 14-19).

In regard to Claim 3

- Confirming that an ignition switch is in an on position read on by step 88 (See Figure 2) which is an option that concerns the position of the ignition switch and the operation of the control apparatus (See Column 5, Lines 15-40).  
Confirmation takes place in step 154 (See Figure 3A) in which the ignition is confirmed to be on, as is the case when IGTASF = 1 (See Column 7, Lines 50-57).
- Confirming that the engine is idling, read on by step 328 (See Column 11, Lines 55-64 & Figure 8) which occurs after the engine has been started which is checked in step 240 by "RUN CHECK" (See Figure 6 & Column 3, Lines 19-24) which discloses that the program of Figure 6 occurs when the engine is running and (See Column 9, Line 63 to Column 10, Line 13)
- Automatically shutting down the engine (See Column 12, Lines 17-43).

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In regard to Claim 20

- Confirming that the vehicle is not moving via switches that check if the transmission is in neutral, and that a park brake is set (See & Column 4, Lines 20-28 & Column 7, Line 63 to Column 8, Line 5) after step (d) in which the engine has been started (See Column 5, Lines 7-14).
- Checking if the engine temperature is above a predetermined limit (See Column 10, Lines 27-33) after step (d) in which the engine has been started (See Step 264 of Figure 7 which is called when the engine is running, after it is started in Figure 7) (See Column 3, Lines 23-25).

Claims 8, 9, 10, & 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sutton, Hanson, & Kippe (US 6,588,449)

In regard to Claim 8, 10, & 12

Sutton teaches:

- A battery having a positive lead (50) (See Column 3, Lines 56-58)
- An engine control module (IC1 & IC2) (See Figure & Column 4, Lines 1-23 & Column 6, Lines 3-18) having an output communicating electrically to a starter device (See Column 3, Lines 47-55)
- A first enabler circuit providing a digital input to the engine control module, read on by the electronic component (IC1) having a park brake switch

(SW4), a hood switch (SW3), neutral gear switch (SW2) wired in series and ground via resistor (R2) (See figure & Column 3, Lines 56-68)

Sutton fails to teach a fuel level switch engaged electrically to the engine control module for indicating a low fuel level condition below a predetermined amount which overrides automatic starting of the engine by the engine control system.

Kippe teaches overriding engine operation by providing a fuel level switch, read on by the solenoid and valve (51', 52'), connected to a fuel level sensor (70) that is directly electrically extended from an engine control module (EEC) that produces a signal when the fuel level in the fuel tank falls below a predetermined amount and disables the engine (See Figure 3 & Column 5, Lines 12-26) by cutting off the fuel supply with the switch (51', 52'). Furthermore, this signal could be used for sending a digital low fuel signal to the engine control module.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate fuel level switch override, as taught by Kippe, into the engine control system of Sutton. The motivation would have been to prevent air from being ingested into the fuel pump (See Kippe Abstract)

Sutton teaches a control module (IC2) having an output communicating electrically to a starter device (70) (See Column 3, Lines 47-55) but is silent as to exactly what type of starter is used claiming that such devices are commonly known in the art (See Column 1, Lines 23-30).



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Hanson teaches a control module (38) which outputs to a starter relay (See Column 4, Lines 1-13) used to start an engine.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate a signal from the controller of Sutton to a starter relay as taught by Hanson. The motivation would have been to provide a component, such as the relay taught by Hanson, capable of adequately starting a vehicle engine based on a received control signal from a control module.

Sutton further teaches:

In regard to Claim 9

- A second enabler circuit extending electrically between the positive lead (50) and the engine control module (IC1) having an ignition switch (SW1) having an on position for enabling the engine control system (See Column 3, See Column 3, Lines 56-68)

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sutton, Hanson, Kippe and Brandwein et al. (US 3,906,437)

Incorporating all arguments above of the engine control system taught by Sutton, Sutton and Kippe fail to explicitly teach an analog voltage sensor. Brandwein et al. teaches a fuel level sensor (40g) attached to a sensor signal voltage conditioning and

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calibrating means (42b through 42g) that produces and conditions analog signals are transmitted to an indicating means (See Column 9, Lines 36-53).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate an analog voltage sensor as taught by Brandwein et al. into the engine control system taught by Sutton and Kippe. The motivation would have been to provide a means to convert the signal from an analog sensor and condition the output voltage of the sensor into a signal that the control module could use.

Claims 18 & 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hanson et al. and Kippe

Hanson et al. teaches:

- An engine control module (38) for receiving inputs and automatically starting and stopping an engine (See Column 4, Lines 14-28)
- An input for sending an initiating signal to the engine control module (38) (See Figure 1) and (Column 4, Lines 20-28) in which the main control board (38) receives an input from a sensor (ie. engine hood position) from the interface board (46) to allow or prevent said engine control to automatically start said engine, read on by step (480) (See Figure 11) by controlling a starter relay (See Column 4, Lines 1-13).

- A safety enabler circuit (46) formed by a string of switches (See Column 4, Lines 20-28) which prevent the control module from closing the starter relay, read on by step (480) (See Figure 11 & Column 15, Lines 5-18).

Sutton fails to teach a safety enabling fuel level switch engaged electrically to the engine control module for indicating a low fuel level condition below a predetermined amount which overrides automatic starting of the engine by the engine control system.

Kippe teaches overriding engine operation by providing a fuel level switch, read on by the solenoid and valve (51', 52'), connected to a fuel level sensor (70) that is directly electrically extended from an engine control module (EEC) that produces a signal when the fuel level in the fuel tank falls below a predetermined level and disables the engine (See Figure 3 & Column 5, Lines 12-26) by cutting off the fuel supply with the switch (51', 52').

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate fuel level switch override, as taught by Kippe, into the engine control system of Sutton. The motivation would have been to prevent air from being ingested into the fuel pump (See Abstract, Kippe)

Sutton teaches a set of parameters whereby each parameter is orientated with a respective switch and where the engine is not started if an unsafe condition is present (See Column 7, Line 63 to Column 8, Line 25 & Column 4, Lines 20-28) but fails to teach where each switch is a grounded switch.

Homme teaches grounded switches (264b,264c,264d) activated in response to various sensors (17 & 18) connected to control circuitry (294). Homme also teaches operating a solenoid, read on by a relay coil (270) controlled by a grounded switch (268) (See Column 10, Lines 58-66).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the grounded switches taught by Homme into the engine control system of Hanson et al. which is silent as to the switching system used to interface the sensors and control board as well as a grounded switch to control the solenoid of the fuel level switch. The motivation would have been to provide the main control board of Hanson et al. with an appropriate signal level, ground, in which to process.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

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extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel J. Cavallari whose telephone number is (571)272-8541. The examiner can normally be reached on Monday-Friday 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Sircus can be reached on (571)272-2800 x36. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Daniel Cavallari

February 10, 2006



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